

REMARKS

The above-identified application is United States application serial number 10/025,578 filed on December 26, 2001. Claims 1-18 are pending in the application. Claims 1-6, 8, 9, 14 and 16 are rejected. Claims 7, 10-13 and 15 are objected to.

Oath/Declaration

On page 2 of the Office Action, the Applicant was advised of the requirement to supply a mailing address for each applicant. In response, Applicant believes each applicant's mailing address was provided in the original declaration. However, the addresses are also provided in an application data sheet submitted herewith.

Drawings

Drawing sheets showing proposed changes to the Figures 4A, 4B, and 7 are submitted herewith. Figure 4A has been revised to conform the drawing to the description provided on Page 11, line 3 of the specification. Figures 7 and 4B have been revised to conform the drawings to the description provided on Page 11, lines 16 and 19-21, respectively, of the specification. Approval of the proposed changes to the drawings is respectfully requested.

Claim Objections

On page 2 of the Office Action, Claims 3, 14, and 15 were objected to because of various informalities. Claims 3, 14, and 15 have been amended to correct the informalities.

Allowable Subject Matter

On page 2 of the Office Action, Claims 7, 10-13 and 15 were objected to as being dependent upon a rejected base claim, but the Examiner did not provide rationale for rejecting Claim 6, other than citing the insufficient antecedent basis and idiomatic errors on page 3, paragraph 9 of the Office Action. The Applicant requests clarification of the status of Claim 6.

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Claim 7 depends from Claim 6. Therefore, Claim 7 is allowable upon the amendment of Claim 6. Claims 10-13 depend ultimately from Claim 9, therefore, Claims 10-13 are allowable upon the amendment of Claim 9. Claim 15 depends from Claim 14. Therefore, Claim 15 is allowable upon the amendment of Claim 14.

On page 3 of the Office Action, the Examiner notes that Claims 8 and 16 would be allowable if rewritten to overcome rejection under 35 U.S.C. § 112 and to include all of the limitations of the base claim and any intervening claims. In response, Applicant has highlighted herein features of Claim 1 that are not disclosed or suggested by Koch or Kyrakis, alone or in combination. Claim 1 is believed to be allowable. Claim 8 depends from Claim 1 and would be allowable for at least the same reasons as Claim 1. Claim 16 depends ultimately from independent Claim 14 and is allowable upon the amendment of Claims 14 and 15.

Rejection of Claims Under 35 USC §112

Claims 6, 8-9, 14 and 16 were rejected under 35 U.S.C. 112, paragraph 2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which application regards as the invention.

In particular, on page 3 of the Office Action, the Examiner indicates an insufficient antecedent basis for the limitation "said laser determination system" in Claim 6. In response, Applicant has amended Claim 6 by making the first reference to "the laser position determination system" The Applicant has also amended Claim 6 by replacing "for determining" with "is operable to determine" to correct idiomatic errors.

On page 3 of the Office Action, the Examiner indicates an insufficient antecedent basis for the limitations "said at least one target" and "said at least one laser" in Claim 8. In response, Applicant has amended Claim 8 by making the first references to "an at least one target" and "an at least one laser target."

On page 3 of the Office Action, the Examiner indicates an insufficient antecedent basis for the limitations "the actual spatial relationship" and "the spatial relationship" in

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Claim 9. In response, Applicant has amended Claim 9 by making the first reference to "a spatial relationship between the carriage" and "a spatial relationship of the head."

On pages 3-4 of the Office Action, the Examiner indicates an insufficient antecedent basis for the limitation "the actual position" in Claim 9. In response, Applicant has amended Claim 9 by consolidating the language and removing this phrase.

On page 4 of the Office Action, the Examiner indicates an insufficient antecedent basis for the limitation "the computer" in Claim 14. In response, Applicant has amended Claim 14 by making first reference to "a computer." In addition, the Examiner indicates an insufficient antecedent basis for the limitation "the actual spatial relationship" in line 8 of claim 9. The Applicant interprets this objection to apply to the same limitation in line 11 of claim 14. In response, Applicant has amended Claim 14 by making the first reference to "a spatial relationship."

On page 4 of the Office Action, the Examiner indicates an insufficient antecedent basis for the limitation "the actual position" in Claim 16. In response, Applicant has amended Claim 16 by making this a second reference to "the spatial relationship there between."

Rejection of Claims Under 35 U.S.C. § 103

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Koch *et. al.* (U.S. Patent No. 4,698,775, hereafter "Koch") in view of Kyrakis (U.S. Patent No. 5,666,202, hereafter "Kyrakis"). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP Section 2142. In the present case, there is no motivation to combine the Koch and the Kyrakis references, and the combination of the Koch and Kyrakis references does not teach or suggest all of the claim limitations.

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Lack of suggestion or motivation for combination

In the present case, there is no suggestion or motivation for one skilled in the art of clean-room transport, or one skilled in the art of large work-piece machining, to modify the Koch reference, or combine the Koch and Kyrakis references. The Koch reference discloses a mobile transport unit with a laser docking module that determines the transport's location relative to a fixed point in the environment. (Koch Abstract). The Examiner relies on the Kyrakis reference to teach determining the spatial relationship between the carriage and the work piece. The relative positioning for placement of material is not as precise as that needed for machining, however, and therefore there is no motivation to combine Koch with Kyrakis because the Koch device maneuvers around fixed pieces of equipment. (Koch, Col. 2, lines 20-24). The Koch reference pertains to positioning cartridges relative to docking stations that are fixed in space rather than to a movable work-piece as disclosed in Kyrakis. High precision relative to vibrational error is not of concern in the Koch reference. Thus there is no suggestion or motivation to use features in the Kyrakis reference to increase positioning accuracy with laser technology in the Koch reference. Similarly, the arm disclosed in Koch is used to hold cargo. There is no suggestion or motivation to refine the arm into a machining head.

There is further no motivation to combine the Koch and Kyrakis references because the references are not of analogous art. It has been held that

"Determination of whether a new combination of known elements would have been obvious to one of ordinary skill depends on various factors, including whether the elements exist in "analogous art", that is, art that is reasonably pertinent to the problem with which the inventor is concerned." In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991) citing In re Deminksi, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986).

In the present case, the Koch reference attempts to solve the problem of moving cargo in a clean room to docking locations, and the Kyrakis reference attempts to solve the problem of non-rigidity in machining large work-pieces. Methods of dealing with fine movements in a

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work-piece are not reasonably pertinent to gross placement of cargo at fixed workplaces and thus the art is nonanalogous.

Failure to teach or suggest all claim limitations

While failure to meet just one of the prongs of the test for obviousness is sufficient to overcome the rejection of claims, Claim 1 is further non-obvious in view of Koch and Kryazis because the combination of the references does not teach or suggest all of the limitations in Claim 1. Koch is relied on for disclosing a machine for performing machining operations on a work-piece, comprising: "a carriage" and an "arm having a movable head containing a tool for performing the machining operations on the work-piece." However, Koch discloses not a movable head containing a tool for performing machining operations on a work-piece, but a method and apparatus for positioning cargo with docking mechanisms.

Koch, Abstract lines 1-2 do not disclose "a machine for performing operations on a work-piece ..." as suggested on Page 4, Item 11 of the Office Action. Rather, Koch teaches "a mobile transport unit for independently operating within an enclosed environment."

Koch Fig. 1 does not disclose "an arm having a movable head containing a tool for performing the machining operations on a work-piece" as suggested on page 4, Item 11 of the Office Action. Rather, Koch discloses an arm with a cargo grasping mechanism.

Koch Column 2, lines 20-25 do not disclose "a laser position determination system for determining the actual spatial relationship of carriage and said work-piece and providing a first signal (laser)" as suggested on page 5, lines 1-2 of the Office Action. Rather, Koch provides a "distance and approach angle of the vehicle's front vertical axis relative to a fixed piece of equipment within the operating environment" (a clean room).

Koch Column 2, lines 25-29 do not disclose "a computer having a computer program providing a third signal to said robotic arm for machining the work-piece on a predetermined spatial relationship between said carriage and the work-piece and for receiving said first and second signals." Rather, Koch discloses "a main vehicle computer and an arm computer are

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mounted within the vehicle and are coupled to various sensory and mechanical inputs and to the arm and vehicle drive motors for controlling movements of the arm and vehicle." There is no reference to machining or to the requisite precision, the "spatial relationship between the carriage and the work-piece" to be determined, or to adjust "said third signal based on the actual spatial relationship between said carriage and the work-piece prior to machining operations and said head and the work-piece during machining operations."

Claims 2-6 depend from Claim 1 and include limitations that further distinguish them from the prior art. For at least these reasons, Claims 1-6 are patentably distinguishable from Koch in view of Kyrakis. Allowance of Claims 1-6 is respectfully requested.

Regarding Claim 3, Claim 3 requires a "laser position determination system." While Koch describes the use of various sensory inputs (Abstract, lines 25-27), Koch does not disclose the use of laser precision, as the need is only for guidance to fixed loading positions. Further, the targets are placed on a workplace for guiding the transport into a docking station, not for placement of a tool head on a work-piece. Thus Koch does not suggest or teach all of the limitations in Claim 3.

Further, regarding Claim 3, Koch (Column 2, lines 26-27) discloses computers "coupled to various sensory and mechanical inputs and to the arm and vehicle drive motors." These lines do not disclose a laser transceiver system, nor the mounting of targets, as stated on page 6, paragraph 1 of the Office Action. For at least these reasons, Claim 3 is patentably distinguishable over Koch in view of Kyrakis. Allowance of Claim 3 is respectfully requested.

Regarding Claim 4, Koch (Column 7, lines 13-14) provide "sensors which automatically stop the unit at a pre-selected distance from an obstacle." However, Koch does not describe any means to lock the machine. Nor does the unit disclosed in Koch take such action based on "a position in proximity to the work-piece." Koch discloses an obstacle avoidance mechanism, not a position control function. Thus Koch does not suggest or teach all of the limitations of Claim 4. For at least these reasons, Claim 4 is not obvious over Koch or Kyrakis, either alone or in combination, and allowance of Claim 4 is respectfully requested.

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Regarding Claim 5, Kyrakis (Column 7, lines 5-8) provides "a pair of stabilized laser beam directors" and "a reference subsystem providing a locally rigid work-piece coordinate system." As discussed above, Kyrakis discloses a tool sensor detector, but does not disclose "a laser position determination system that includes a single laser transceiver assembly adapted to track at least one first, second and third laser target," as stated on page 6, paragraph 3 of the Office Action. For at least these reasons, Claim 5, as amended, is not obvious over Koch or Kyrakis, either alone or in combination, and allowance of amended Claim 5 is respectfully requested.

Newly Added Claim

Claim 19 has been added to capture subject matter which was disclosed but not separately claimed when the application was originally filed.

Terminology Changes in the Claims

Claims 1, 3, 5-9, 11, 13, 17, and 18 have been amended to change the word "said" to "the" for consistency in the claim language. The amendment is not intended to affect the scope of the claims, and is not made for reasons of patentability.

Claim 1 was further amended to remove unnecessary limitations including "a robotic arm mounted on said carriage, said arm having"; and to change "a computer having a computer program providing" to --a computer processor operable to provide--. The term "robotic arm" was changed to --movable head-- since "robotic arm" was deleted from Claim 1. The phrase "and said head and the work piece during machining operations" was also deleted as an unnecessary limitation. The amendments are intended to broaden the scope of Claim 1.

Claim 9 was further amended to remove unnecessary limitations including "containing a tool" and "the computer having", "for controlling the movement thereof", "so that the tool can perform the machining operations, the machine comprising", "the performance of", "the

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computer program adapted to", and "to the specific spatial relationships". The amendments are intended to broaden the scope of Claim 9.

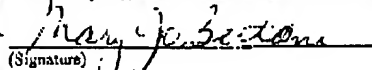
Unnecessary limitations were also deleted from Claims 14, 15, 17, and 18 and are intended to broaden the scope of the respective claims.

The terms "determining", "providing", and "adjusting" in Claim 1 were changed to --determine--, --provide--, and --adjust-- to clarify that Claim 1 is not intended to include means plus function limitations. Similar amendments were made to verbs in Claims 6, 9, and 14. The amendments are not intended to affect the scope of the respective claims.

CONCLUSION

In view of the amendments and remarks set forth herein, Claims 7, 8, 10-12, and 14-18 are believed to be in condition for allowance and a notice to that effect is solicited. Reconsideration of Claims 1-5, 6, 9 and 13 is requested. Claim 19 has been added. Substitute drawings will be submitted after approval of the claims. Should any issues arise that might be subject to resolution through a telephone interview, the Examiner is requested to contact the undersigned at (949) 251-0250.

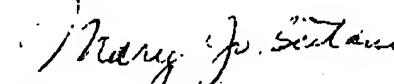
I hereby certify that this correspondence is being facsimile transmitted to the USPTO, Technology Center 3100 at (703)872-9906 on the date shown below


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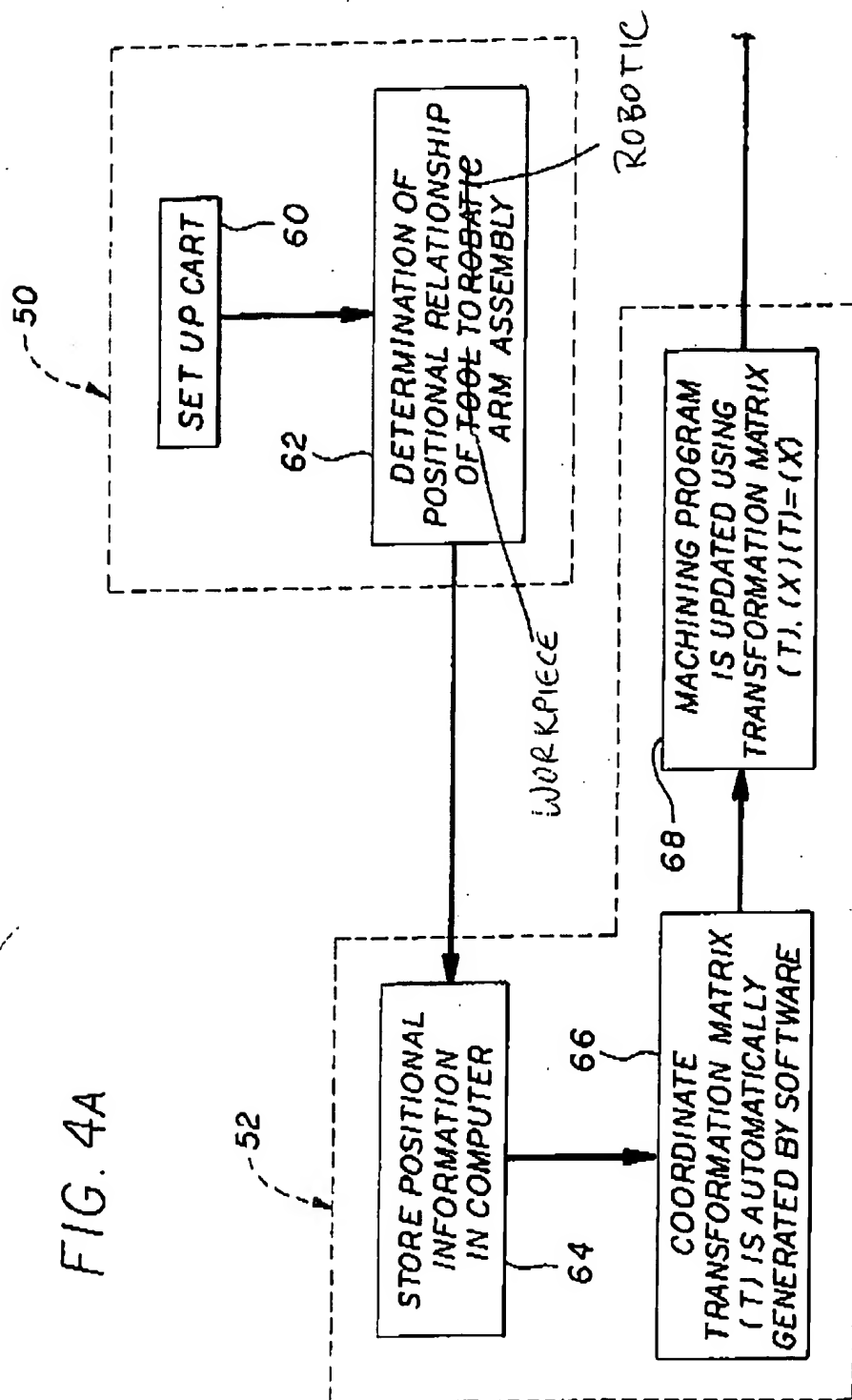
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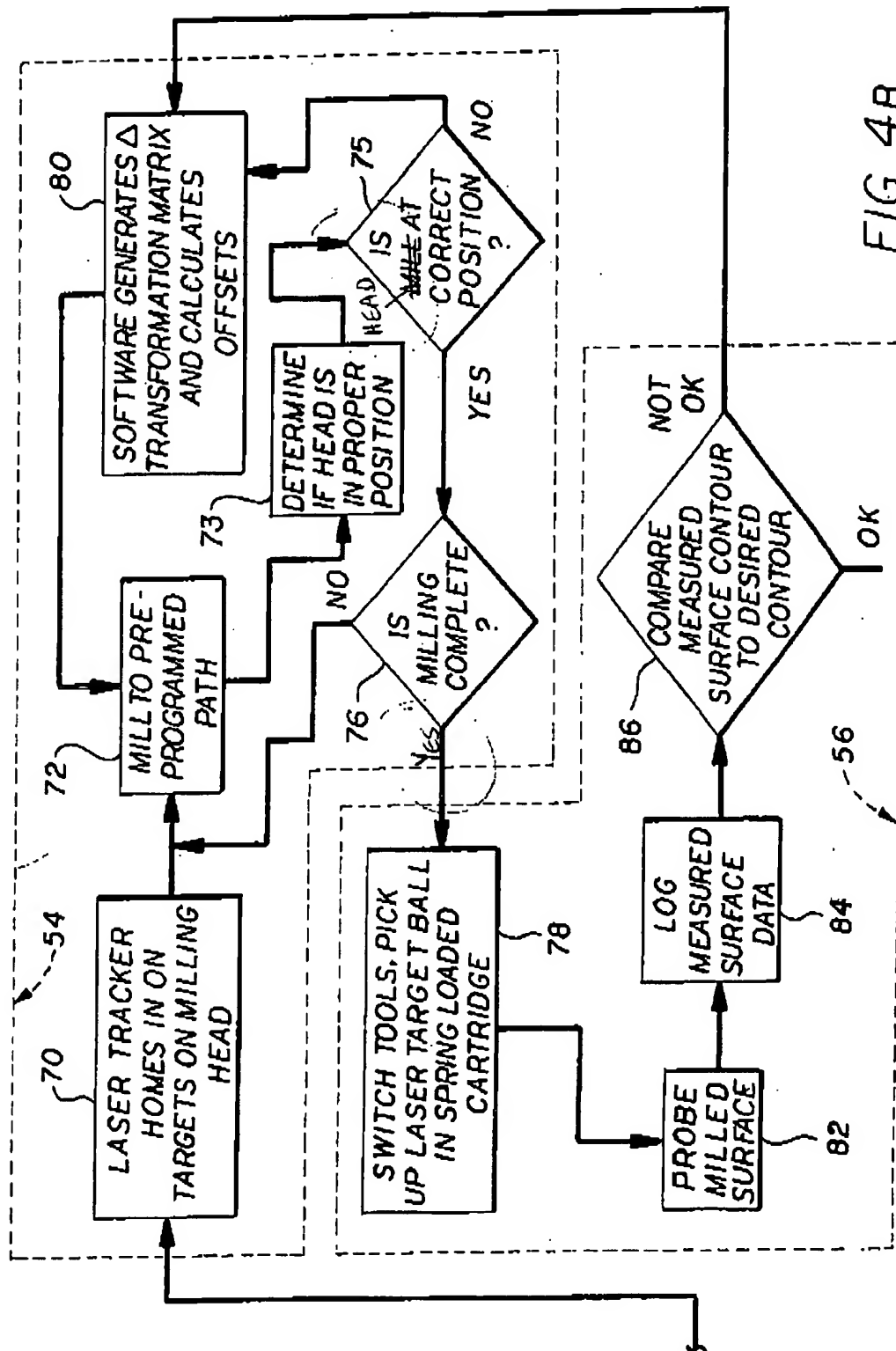
Respectfully submitted,



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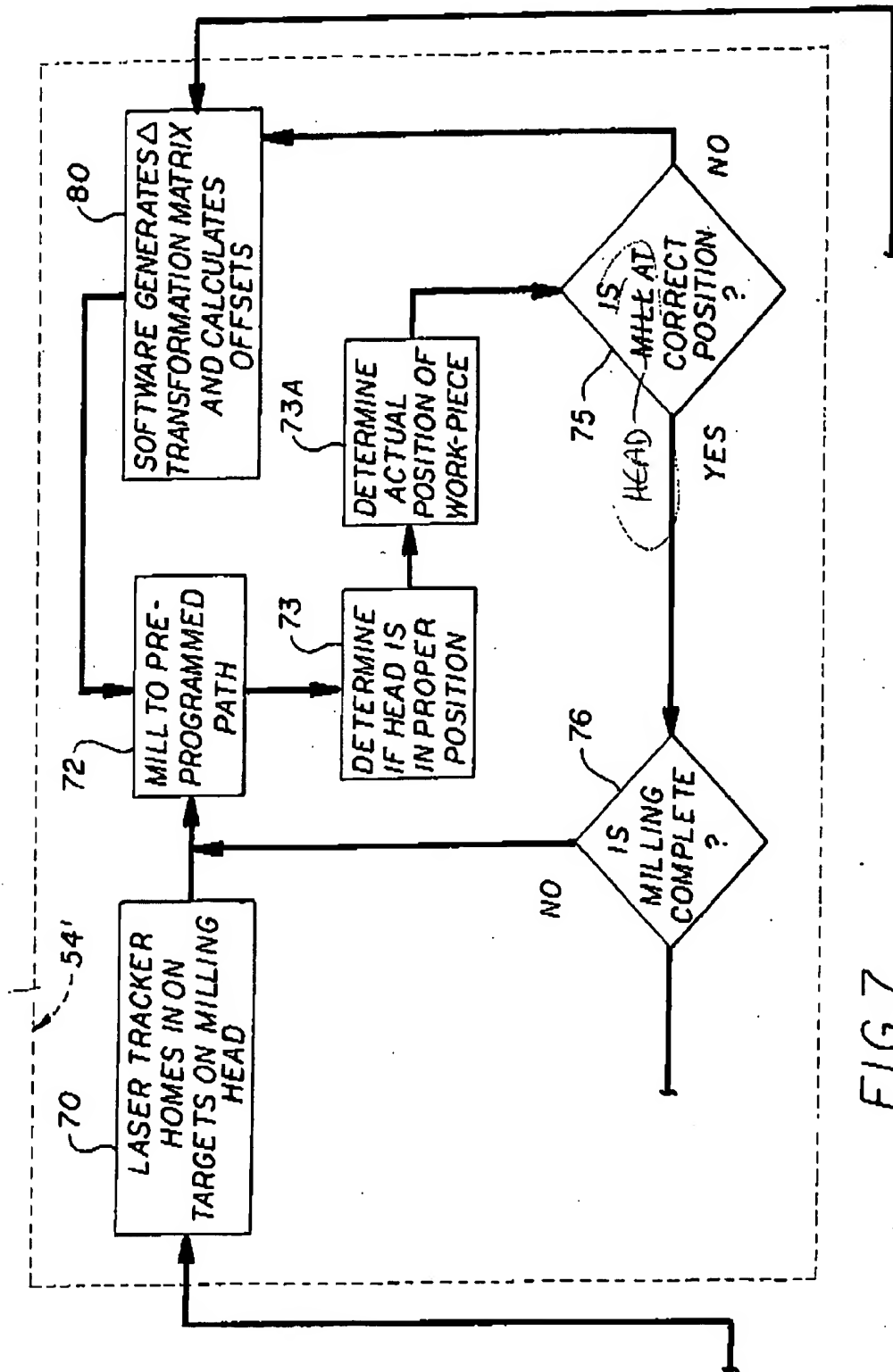


FIG. 7